AMENDMENT TO THE CLAIMS

1. (currently amended) A method of controlling fly height in a disc drive, comprising:

providing a fly height spacing between a read/write head on a slider and a media surface on a disc;

sensing with an electrode tip that is disposed on the slider and that faces a first portion of the media surface across a gap, the electrode tip conducting an electric current that passes through the gap, and the electrode tip providing a sensor electrical output representative of the length of the gap;

capacitively actuating the fly height spacing, using a capacitor plate that is on the slider, as a function of a received actuator electrical input; and

providing a feedback circuit comprising a lead directly connected from the electrode tip to the capacitor plate ~~the actuator electrical input as a feedback function of the sensor electrical output~~ to control the fly height spacing.

2.(original) The method of Claim 1 wherein the electric current that passes through the gap is a quantum mechanical field emission current from the electrode tip.

3. (original) The method of Claim 2 further comprising:

controlling the gap in a range of 5 to 15 nanometers.

4. (original) The method of claim 1 further comprising:

providing the electrode tip with a tip surface comprising material selected from the group: p-doped diamond, diamond-like carbon (DLC), tungsten, molybdenum, lanthanum hexaboride, silica particles and beryllia particles.

5. (original) The method of Claim 1 further comprising:
forming the electrode tip as part of a layer of metal in the read/write head.

6. (previously presented) The method of Claim 1 further comprising mechanically coupling the electrode tip to the capacitive actuating.

7. (previously presented) The method of Claim 1 wherein the capacitive actuation is performed by a first capacitive electrode surface that is disposed on the slider and that faces a second portion of the disc that forms a second capacitive electrode.

8. (original) The method of Claim 7 further comprising:
spacing the first capacitive electrode surface apart from the second portion of the disc by a capacitor spacing that is greater than the gap length.

9. (currently amended) A disc drive, comprising:
a disc that includes a media surface;
a slider that includes a read/write head that is spaced apart from the media surface by a fly height spacing;
a sensor comprising an electrode tip disposed on the slider and facing a first portion of the media surface across a gap, the sensor being adapted to conduct an electric current through the gap and to provide a sensor electrical output representative of the length of the gap;
a capacitive actuator adjusting the fly height spacing as a function of a received actuator electrical input, the capacitive actuator including a capacitor plate that is on the slider; and

a feedback circuit comprising a lead that directly connects from the electrode tip to the capacitor plate ~~providing the actuator electrical input as a feedback function of the sensor electrical output~~ to control the fly height spacing.

10. (original) The disc drive of Claim 9 wherein the electrode tip has a tip surface adapted to provide quantum mechanical field emission current through the gap.

11. (original) The disc drive of Claim 9 wherein the gap is in a range of 5 to 15 nanometers.

12. (original) The disc drive of claim 9 wherein the tip has a tip surface comprising material selected from the group: p-doped diamond and diamond like carbon (DLC), tungsten, molybdenum, lanthanum hexaboride, silica particles and beryllia particles.

13. (original) The disc drive of Claim 9 wherein the electrode tip is part of a layer of material in the read/write head.

14. (previously presented) The disc drive of Claim 9 wherein the capacitive actuator is mechanically coupled to the electrode tip.

15. (previously presented) The disc drive of Claim 9 wherein the capacitive actuator comprises a first capacitive electrode surface that is disposed on the slider and that faces a second portion of the media surface that forms a second capacitive electrode.

16. (currently amended) The disc drive of Claim 15 ~~further comprising spacing~~ wherein the first capacitive electrode surface

is spaced apart from the second capacitive electrode by a capacitor spacing that is greater than the gap spacing.

17.(currently amended) A disc drive, comprising:

a slider including a read/write head, and a disk including a media surface spaced apart from the read/write head by a fly height spacing and a capacitive actuator adjusting the fly height spacing as a function of a received actuator electrical input, the capacitive actuator including a capacitor plate that is on the slider; and

feedback means for sensing the fly height spacing as a function of a quantum mechanical current across a gap between an electrode tip on the slider and the media surface, the feedback means generating the actuator electrical input to control the fly height spacing, the feedback means comprising a lead that directly connects the electrode tip to the capacitor plate.

18.(previously presented) The disc drive of Claim 17 further comprising mechanical coupling between the means for sensing the fly height and the capacitive actuator.